

**Claims**

We claim:

1. A lithographic material that contains a polymer bearing at least one polyhedral oligomeric silsesquioxane group, the alkyl substituents of the group -that are  
5 not linked to the main chain (backbone) of the polymer- containing up to 3 carbon atoms.
2. A positive tone lithographic material that contains a polymer bearing at least one polyhedral oligomeric silsesquioxane group, the alkyl substituents of the  
10 group -that are not linked to the main chain (backbone) of the polymer- containing up to 3 carbon atoms.
3. A chemically amplified positive tone lithographic material that contains a polymer bearing at least one polyhedral oligomeric silsesquioxane group, the alkyl substituents of the group -that are not linked to the main chain  
(backbone) of the polymer- containing up to 3 carbon atoms.
- 15 4. A chemically amplified positive tone lithographic material that contains a polymer bearing at least one polyhedral oligomeric silsesquioxane group, the alkyl substituents of the group -that are not linked to the main chain (backbone) of the polymer- being ethyl groups.
5. A chemically amplified positive tone lithographic material that contains a  
20 (meth)acrylic polymer, bearing at least one polyhedral oligomeric silsesquioxane group, the alkyl substituents of the group -that are not linked to the main chain (backbone) of the polymer- being ethyl groups.
6. A lithographic process including a 157 nm exposure of a lithographic material containing a polymer, bearing at least one polyhedral oligomeric  
25 silsesquioxane group.
7. A lithographic process including a 157 nm exposure, or generally VUV, or EUV exposure, of a lithographic material containing a polymer, bearing at least one polyhedral oligomeric silsesquioxane group, the alkyl substituents of the group -that are not linked to the main chain (backbone) of the polymer-  
30 containing up to 3 carbon atoms.
8. A lithographic process including a 157 nm exposure, or generally VUV, or EUV exposure, of a lithographic material containing a polymer, bearing at least one polyhedral oligomeric silsesquioxane group, the alkyl substituents of

the group -that are not linked to the main chain (backbone) of the polymer-  
being ethyl groups.

- 5 9. A bilayer lithographic process with a positive tone lithographic material  
containing a polymer, bearing at least one polyhedral oligomeric  
silsesquioxane group, the alkyl substituents -that are not linked to the main  
chain (backbone) of the polymer- containing up to 3 carbon atoms.
- 10 10. A bilayer lithographic process with a positive tone lithographic material  
containing a polymer, bearing at least one polyhedral oligomeric  
silsesquioxane group, the alkyl substituents -that are not linked to the main  
chain (backbone) of the polymer- being ethyl groups.

15

20

25

30

35

40